



12935 - Witnessing the Expansion of Hydrogen-Poor Ejecta in Born-Again Planetary Nebulae

Cycle: 20, Proposal Category: GO
(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

<i>Visit</i>	<i>Targets used in Visit</i>	<i>Configurations used in Visit</i>	<i>Orbits Used</i>	<i>Last Orbit Planner Run</i>	<i>OP Current with Visit?</i>
01	(1) ABELL30	WFC3/UVIS	1	26-Sep-2012 21:33:54.0	yes
02	(2) ABELL78	WFC3/UVIS	1	26-Sep-2012 21:34:01.0	yes

2 Total Orbits Used

ABSTRACT

Abell 30 and Abell 78 are "born-again" planetary nebulae whose central stars have experienced a very late thermal pulse. This event led to the ejection of hydrogen-poor material some 1000 yr ago. This ejecta is being photo-evaporated and swept up and accelerated by a newly developed fast stellar wind. We have used archival HST F502N ([O III]) and F555W images to detect the expansion of the ejecta knots in Abell 30. We request new WFC3/UVIS [O III] images of Abell 30 and Abell 78 to be compared with WFPC2 [O III] images taken in the mid 90's. The comparison will allow us to determine the expansion rate and geometry of the hydrogen-poor ejecta, estimate the time since the born-again event, and study the interaction of fast stellar winds with material photo-evaporated from the hydrogen-poor knots.

OBSERVING DESCRIPTION

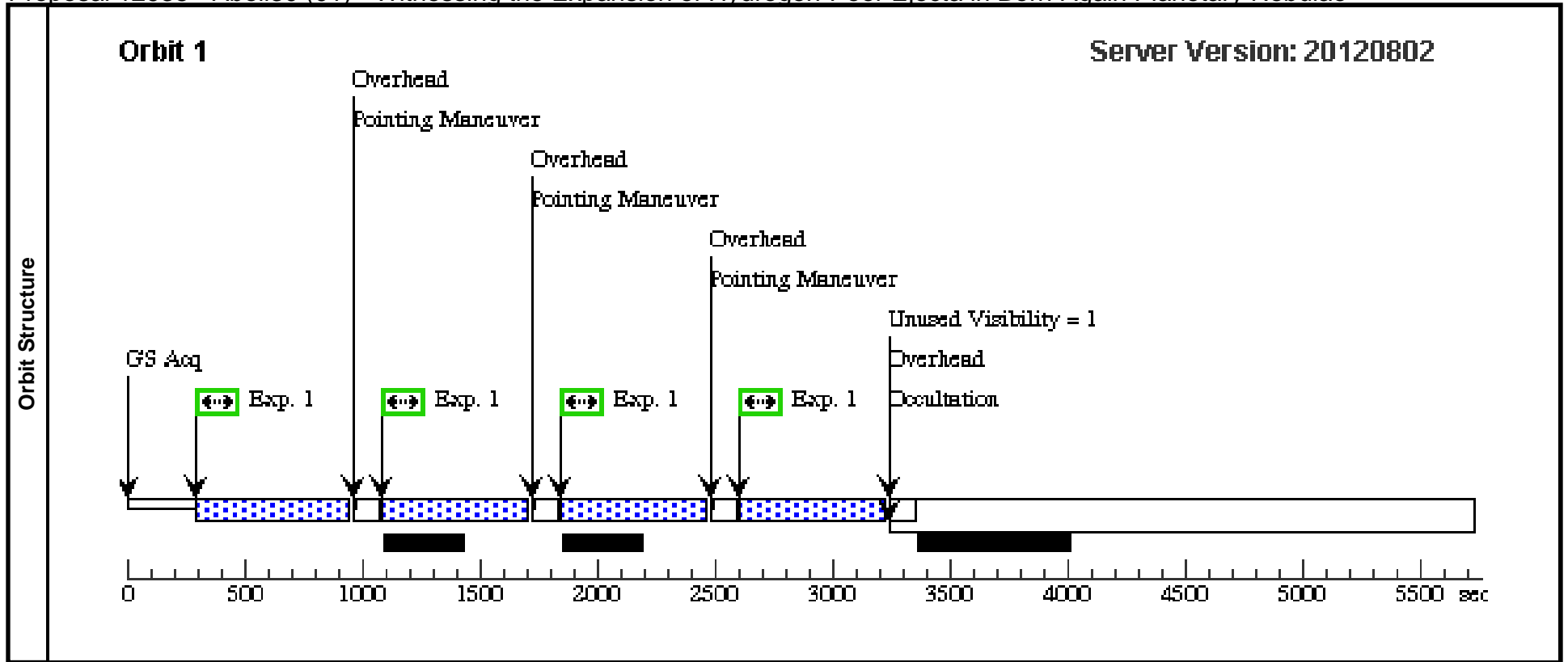
We propose to acquire HST WFC3/UVIS F502N images of the planetary nebula Abell 30 and Abell 78. Previous HST WFPC2-PC F502N images of Abell 30 and Abell 78 were obtained on 1994 March 6 and 1995 July 11, so the new images will be used to study the nebular expansion of the innermost regions of these planetary nebulae.

Given the target declinations, their visibilities are at least 54 minutes. Accounting for guide-star acquisition and WFC3/UVIS overheads, four exposures of 600 seconds each can be acquired in one orbit per object.

Proposal 12935 - Abell30 (01) - Witnessing the Expansion of Hydrogen-Poor Ejecta in Born-Again Planetary Nebulae

Thu Sep 27 01:34:08 GMT 2012

Visit	Proposal 12935, Abell30 (01), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 25D TO 135 D; ORIENT 190D TO 225 D; ORIENT 310D TO 360 D									
	Patterns	#	Primary Pattern				Secondary Pattern			
(1)		Pattern Type=WFC3-UVIS-GAP-LINE		Coordinate Frame=POS-TARG		Pattern Type=WFC3-UVIS-DITHER-LINE		Coordinate Frame=POS-TARG		(1)
		Purpose=MOSAIC		Pattern Orientation=85.759		Purpose=DITHER		Pattern Orientation=46.84		
		Number Of Points=2		Angle Between Sides=		Number Of Points=2		Angle Between Sides=		
		Point Spacing=2.414		Center Pattern=false		Point Spacing=0.145		Center Pattern=false		
		Line Spacing=				Line Spacing=				
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes	Miscellaneous		
	(1)	ABELL30	RA: 08 46 53.4920 (131.7228833d)				V=14.3	Reference Frame: ICRS		
			Dec: +17 52 46.83 (17.87968d)							
			Equinox: J2000							
	<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>									
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]	Orbit
	1		(1) ABELL30	WFC3/UVIS, ACCUM, UVIS	F502N	FLASH=10.0	POS TARG 0.0,7.5	Pattern 1, Exps 1-1 in Abell30 (01) (1)	300 Secs	
									[=>625.0 Secs (Pattern 1,1)]	
									[=>625.0 Secs (Pattern 1,2)]	
									[=>625.0 Secs (Pattern 2,1)]	
									[=>625.0 Secs (Pattern 2,2)]	[1]



Proposal 12935 - Abell78 (02) - Witnessing the Expansion of Hydrogen-Poor Ejecta in Born-Again Planetary Nebulae

Thu Sep 27 01:34:10 GMT 2012

Visit	Proposal 12935, Abell78 (02), implementation Diagnostic Status: No Diagnostics Scientific Instruments: WFC3/UVIS Special Requirements: ORIENT 50D TO 150 D; ORIENT 285D TO 320 D										
	Patterns	#	Primary Pattern				Secondary Pattern				Exposures
(1)		Pattern Type=WFC3-UVIS-GAP-LINE Purpose=MOSAIC Number Of Points=2 Point Spacing=2.414 Line Spacing=		Coordinate Frame=POS-TARG Pattern Orientation=85.759 Angle Between Sides= Center Pattern=false		Pattern Type=WFC3-UVIS-DITHER-LINE Purpose=DITHER Number Of Points=2 Point Spacing=0.145 Line Spacing=		Coordinate Frame=POS-TARG Pattern Orientation=46.84 Angle Between Sides= Center Pattern=false		(1)	
Fixed Targets	#	Name	Target Coordinates		Targ. Coord. Corrections		Fluxes		Miscellaneous		
	(2)	ABELL78	RA: 21 35 29.3800 (323.8724167d) Dec: +31 41 45.30 (31.69592d) Equinox: J2000				V=13.25		Reference Frame: ICRS		
<i>Comments: This object was generated by the targetselector and retrieved from the SIMBAD database.</i>											
Exposures	#	Label	Target	Config,Mode,Aperture	Spectral Els.	Opt. Params.	Special Reqs.	Groups	Exp. Time/[Actual Dur.]		Orbit
	1		(2) ABELL78	WFC3/UVIS, ACCUM, UVIS	F502N	FLASH=10.0	POS TARG 0.0,7.5	Pattern 1, Exps 1-1 in Abell78 (02) (1)	300 Secs [==>631.0 Secs (Pattern 1,1)] [==>631.0 Secs (Pattern 1,2)] [==>631.0 Secs (Pattern 2,1)] [==>631.0 Secs (Pattern 2,2)]		[1]

